On the Internal Dynamics of Protons, Anti-Protons, and Matter-Antimatter Reactions

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Introduction

The currently accepted Standard Model of Physics holds that anti-protons are defined by their constitution by so-called “anti-up” quarks and a single “anti-down” quark. It is held, furthermore, that these anti-quarks have some unknown electrical-like property that is the inverse of the corresponding property of conventional “up” and “down” quarks and that this property is the underlying cause of the powerful emission of energy resulting from matter-antimatter reactions. This component of the Standard Model is in need of revision given that anti-matter’s differentiating properties are distinctly different from what is broadly believed at this time.

Abstract

A proton is composed of two “up” quarks and one “down” quark in the following configuration:

The “down” quark remains in a relative central and stationary position, equidistant from the two “up” quarks, which may be termed, in a proton, the “exterior” quarks. The quark in a proton or neutron of which there is only one is always the “interior” quark. This interior quark serves as a stabilizing agent that prevents the mutual repulsion and dissolution of the quark systems viz. Protons. The energy with which these exterior quarks revolve around their interior quark determines the force with which like-quarks mutually repel one another. Two classical protons feature exterior quarks with sufficient energy that the exterior quarks’ orbits will never overlap with that of other nucleons and the discrete quark systems will not interfere with one another.

Quark systems sc. Protons rely upon the precise antipodean positioning of the two exterior quarks with respect to one another. A quark’s entry into this orbital system would result in the disruption of the system and the forceful ejection of the quarks of both the proton and the anti-proton.

In Coulomb dynamics, proximity and electrical charge determine the force with which mutual attraction or repulsion of particles will occur. At the level of quarks, these dynamics do not adhere to Coulomb’s principles in all respects. The chief difference between the dynamics between protons and electrons and the dynamics between quarks lies in the fact that **proximity and velocity,** rather than proximity and electrical charge, determine the amount of force with which mutual attraction and repulsion will occur.

There is a strong tendency in protons (and to a lesser extent in the case of radical neutrons, which are limited in their persistence as particles,) for the proton to maintain its integrity and for its constituent quarks to maintain the level of energy vested in them at the outset of what we call the Universe. Only when a quark is able to penetrate the quasi-impenetrable barrier created by the exterior quarks of the proton can that quark system be disrupted. Matter-antimatter reactions are the result of degenerate quark systems i.e. protons with exterior quarks with lesser energy than that of those found in conventional protons merging with conventional protons. Because the mutual repulsion between two “up” quarks, for instance, is lesser when one of those quarks has less orbital velocity (this I believe to be the defining characteristic of nucleonic antimatter,) these low-energy protons referred to, at this time, as “anti-matter,” are able to cross the boundary created by the exterior quarks of the classical proton. In so doing, these “anti-protons” disrupt the antipodean balance of the classical proton’s quark system. The instant this occurs, both the quark systems of the matter and anti-matter fall out of balance much as a flywheel, resulting in the destruction of the system and the energetic expulsion of all quarks of both systems.

The ultimate source of much of the energy of a matter-antimatter reaction is vested in the proton at the outset of the Universe. Also like a flywheel, provided that there is zero friction, the exterior quarks of quark systems are capable of maintaining their internal momentum indefinitely so long as anti-matter does not come into proximity with said protons.

Conclusion

The existence of anti-down and anti-up quarks, being that it is entirely unproven, is an unlikely explanation for the observed reaction between protons and anti-protons. Given that the electron-positron relationship is, in this author’s judgment, also based upon relative, internal mechanical differences (and not differences of composition,) it stands to reason that another; albeit distinct; set of mechanical differences underpin the unique reaction resulting from the interaction of nucleonic matter and anti-matter.